

Listing of the Claims:

Claim 1 (Currently Amended): A continuous vacuum carburizing process comprising:

under a reduced pressure of 5 kPa or less, forming at least one carburizing atmosphere in which pressure and gas composition are constant, by supplying and discharging one of chain saturated hydrocarbon, chain unsaturated hydrocarbon gas and cyclic hydrocarbon used as a carburizing medium to and from at least one area in an enclosed space and by lowering pressure in a surrounding area of the at least one area than the pressure of the carburizing atmosphere;

activating carbon in the carburizing atmosphere by heating the carburizing atmosphere to 850° C to 1050° C;

forming a carrier gas atmosphere, in which the carburizing medium gas does not exist and which is spatially continued from the carburizing atmosphere, by supplying and discharging carrier gas to and from another area adjacent to the carburizing atmosphere in the enclosed space, and heating the carrier gas atmosphere;

preventing the carburizing medium in the carburizing atmosphere from entering the carrier gas atmosphere, and preventing the carrier gas in the carrier gas atmosphere from entering the carburizing atmosphere while keeping both the carburizing atmosphere and carrier gas atmosphere open and spatially connecting with each other;

continuously passing one of a continuous material selected from the group of a metal wire, a metal strip and a metal pipe through the carburizing atmosphere and the carrier gas atmosphere to carburize the one continuous material and then cause the carbon carburized in the one continuous material to be diffused into the inner sections of the one continuous material; and

repeating the passing of the one continuous material through the carburizing atmosphere and then through the carrier gas multiple times.

Claims 2-3 (Canceled).

Claim 4 (Original): The continuous vacuum carburizing process according to claim 1, wherein said activating carbon comprises bringing the carbon into a plasma state and heating the carburizing atmosphere to 400° C to 1050° C.

Claims 5-7 (Canceled).

Claim 8 (Original): The continuous vacuum carburizing process according to claim 1, wherein carburizing is performed until the material reaches or exceeds the desired carbon content.

Claim 9 (Original): The continuous vacuum carburizing process according to claim 1, wherein the material has a diameter of 0.02 mm to 3 mm in case of the metal wire, a thickness or width of 0.02 mm to 3 mm in case of the metal strip and a wall thickness of 0.02 mm to 3 mm in case of the metal pipe, and the material is carburized to a center of its cross section.

Claim 10 (Original): The continuous vacuum carburizing process according to claim 1, wherein the material is carburized only in a surface layer thereof.

Claim 11 (Original): The continuous vacuum carburizing process according to claim 1, wherein the material comprises one of carbon steel for machine construction, alloy steel for machine construction, tool steel, spring steel and stainless steel.

Claim 12 (Original): The continuous vacuum carburizing process according to claim 1, wherein the material comprises one of a nickel alloy and a cobalt alloy containing one or more of carbide-forming elements of boron, titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum and tungsten.

Claim 13 (Original): The continuous vacuum carburizing process according to claim 1, wherein the material comprises one of a metal and an alloy which has as a main component one of carbide-forming elements of boron, titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum and tungsten.

Claims 14-19 (Canceled).